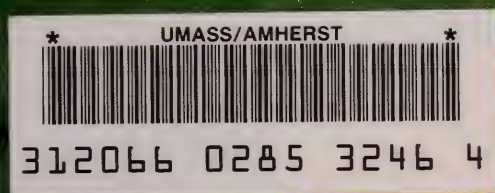


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# Guide to Selected Invasive Non-native Aquatic Species in Massachusetts



GOVERNMENT DOCUMENTS  
COLLECTION  
JUN 1 2002

Massachusetts  
Library Copy

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Non-native species are a problem in many Massachusetts lakes, ponds, and rivers. Once in a water body, many of these organisms can spread aggressively, out-competing and frequently eliminating native species. They reduce the health of our water bodies by disrupting natural ecosystems and altering fish and wildlife habitats. Frequently, they make swimming, boating, and fishing difficult or dangerous. Many plant species produce a dense vegetative cover on lakes, and the large amount of decomposing organic matter accelerates eutrophication in the lake system.

Often, non-native aquatic species spread to new water bodies when they are transferred by boats, motors, bait buckets, fishing tackle and trailers. These infestations can be prevented if everyone remembers to completely clean their boats, motors, fishing equipment and trailers before leaving a site. Dispose of all organisms and drain water from your boat on dry land before leaving a water body.

**YOU CAN HELP!!!** Learn how to identify these organisms and help prevent their spread throughout Massachusetts. For more information, or to report an infestation, please contact:



**Massachusetts Department of  
Environmental Management**  
Lakes and Ponds Program  
(508) 792-7716 ext 170  
[www.state.ma.us/dem/](http://www.state.ma.us/dem/)



**Massachusetts Department of  
Environmental Protection**  
Office of Watershed Management  
(508) 767-2877  
[www.state.ma.us/dep/](http://www.state.ma.us/dep/)



**Massachusetts Division of Fisheries  
and Wildlife**  
Natural Heritage and Endangered Species Program  
(508) 792-7270 ext. 163  
[www.state.ma.us/dfwele/dpt\\_toc.htm](http://www.state.ma.us/dfwele/dpt_toc.htm)



**Massachusetts Congress of Lakes and  
Ponds Association (COLAP)**  
(508) 429-5085  
[www.colap.com](http://www.colap.com)

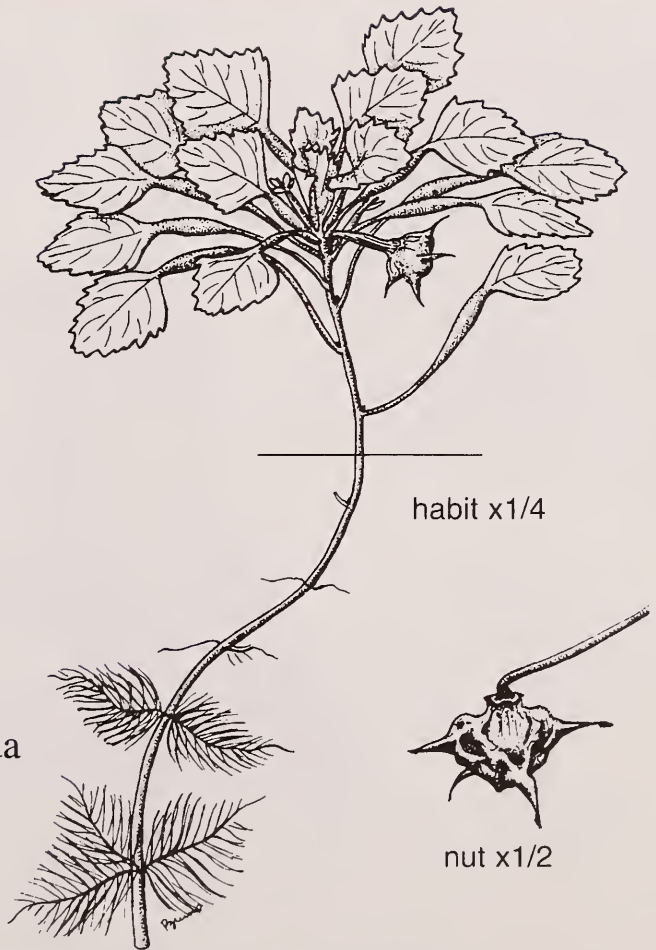


# WATER CHESTNUT

*Trapa natans*



Water chestnut is a major nuisance in the Concord River and Charles River systems of eastern Massachusetts, and it appears to be spreading rapidly elsewhere in the State. Large populations have been noted in the Connecticut River, and it has been found in Berkshire County. It is believed that ducks and geese may be the major means of dispersal. Canada geese have been observed with the spiny nuts attached to their feathers.

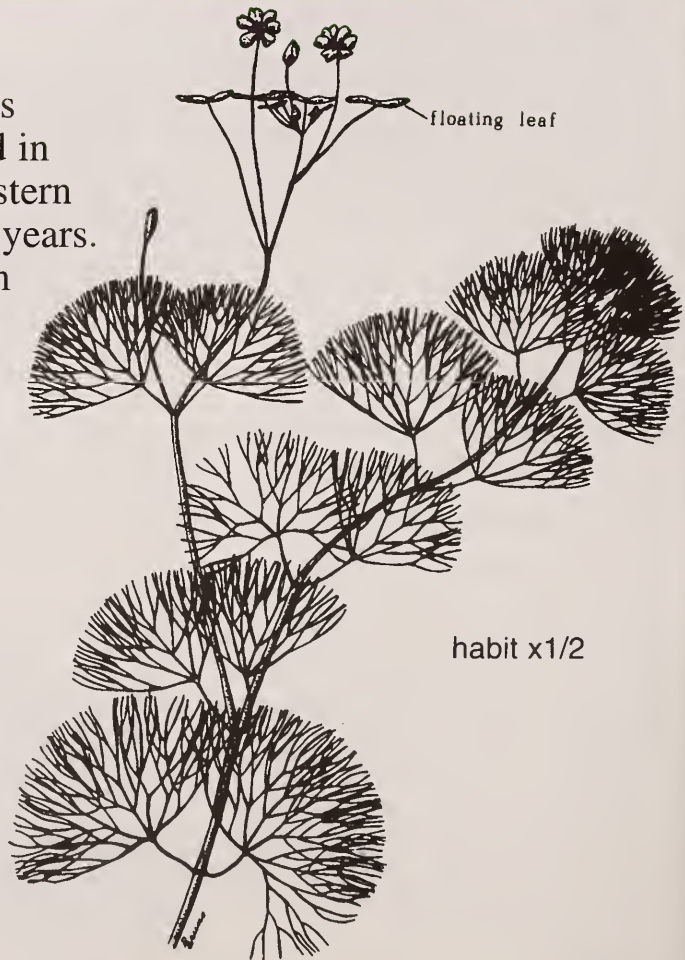


# FANWORT

*Cabomba caroliniana*



This southern United States native has been established in the acid water ponds of eastern Massachusetts for over 50 years. The plant is separated from the small white flowers and leaves that arise from a small stem. This gives the leaves a fan-like appearance.



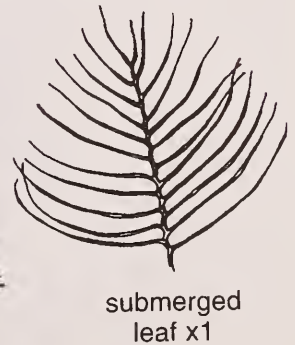
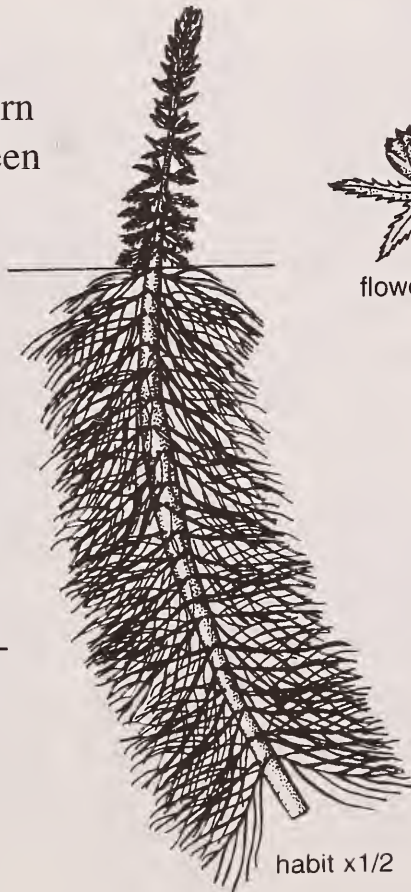


# VARIABLE WATERMILFOIL

## *Myriophyllum heterophyllum*



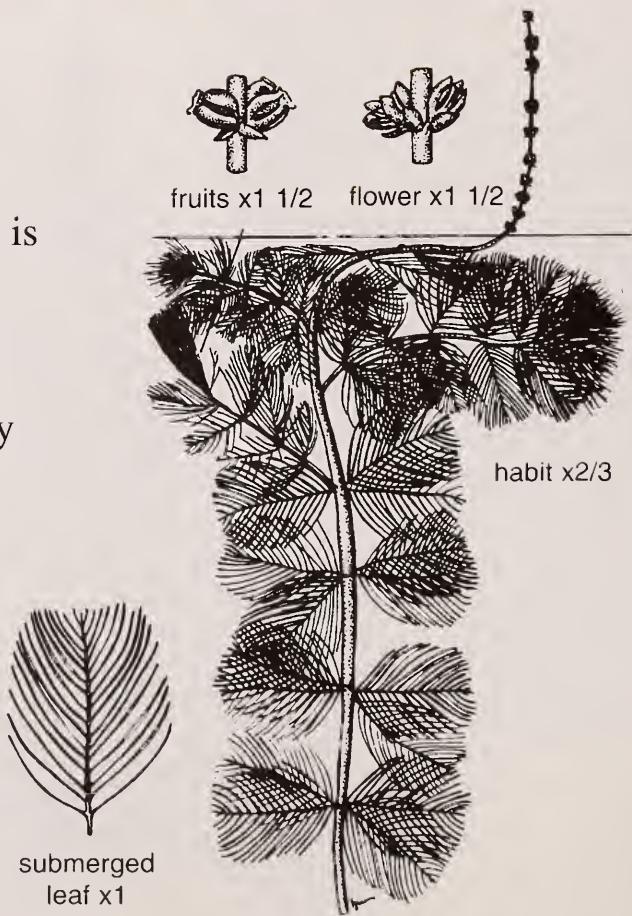
This southern and western U.S. species has long been established in the acidic waters of eastern Massachusetts. This species is identified by the leaf-whorls being located closely together along the stem and with large leaf-like bracts on the emergent stems that are longer than the flowers or fruits.



EURASIAN WATERMILFOIL  
*Myriophyllum spicatum*.



This Eurasian species is extremely abundant in the alkaline waters of Berkshire County, but also is aggressive in the eastern counties. It is identified by the widely-spaced whorled leaves and the tiny emersed bracts that are much shorter than the flowers and fruit.





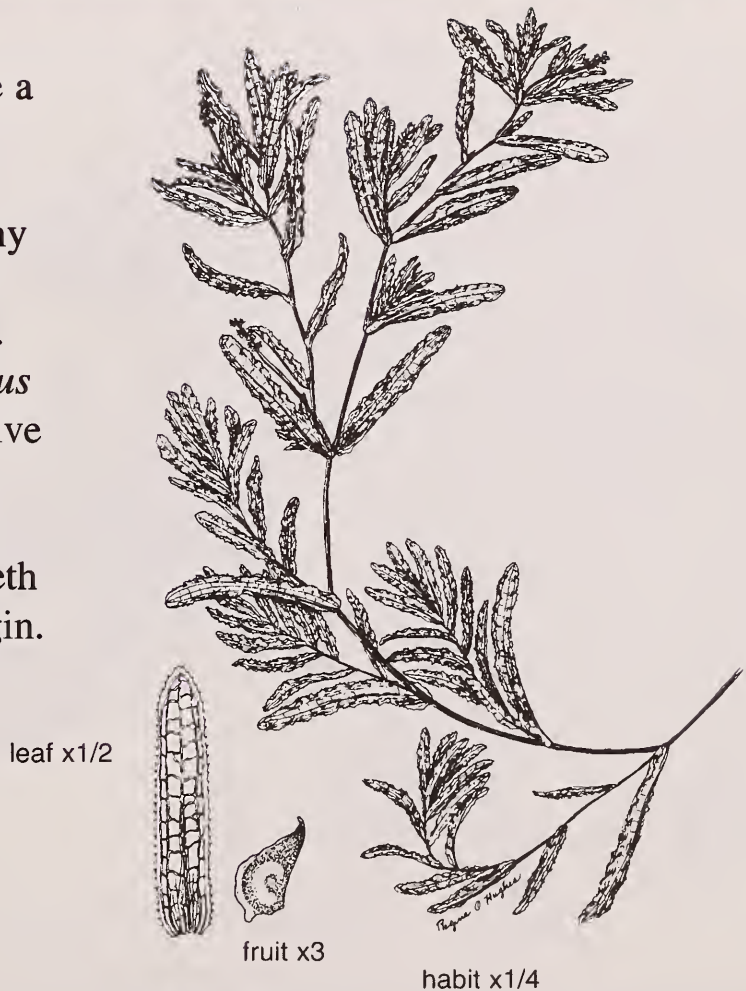
# CURLY-LEAVED PONDWEED

*Potamogeton crispus*



The pondweeds are a very common and diverse group of aquatic plants. Many native species may become a nuisance.

*Potamogeton crispus* is the only non-native pondweed and is easily identified by the conspicuous teeth along the leaf margin.



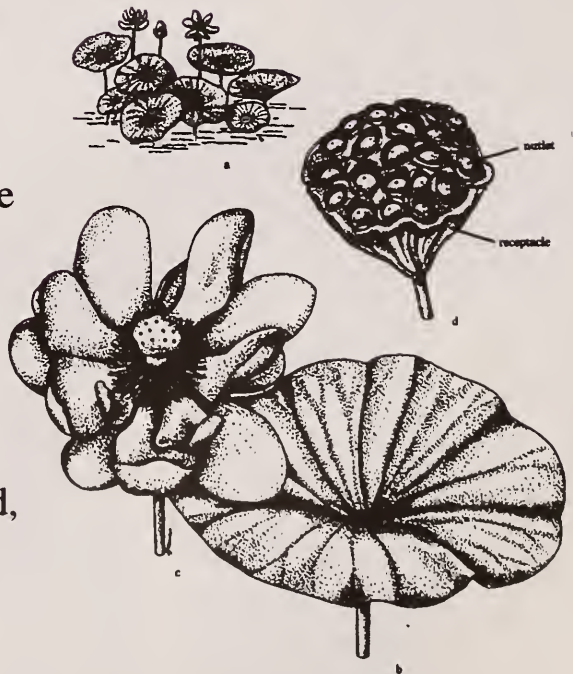
# YELLOW WATER LOTUS

*Nelumbo lutea*



This species is native to New England and often is used in private water gardens.

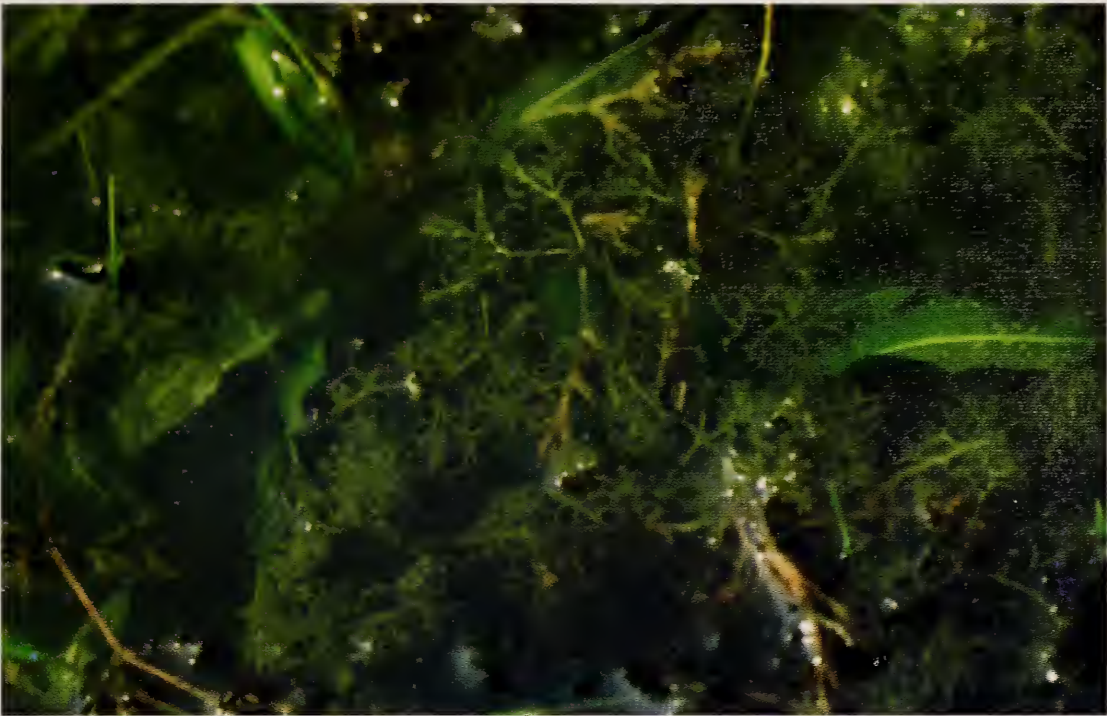
Care should be take not to introduce this species into the environment. These plants reproduce by tuber and seed and can overpopulate shallows of a pond. The Yellow lotus forms large dense mats that are virtually impenetrable. Look for broad, flat leaves floating on the surface with a large, bright yellow flower. The flowers can be 2 to 3 inches wide.





EUROPEAN NAIAD

*Najas minor*



This species is naturalized in some of the alkaline lakes of Berkshire County. It is identified by the lobed leaf bases and the conspicuous leaf serrations. Dense growth can crowd out native vegetation and impede swimming and boating.

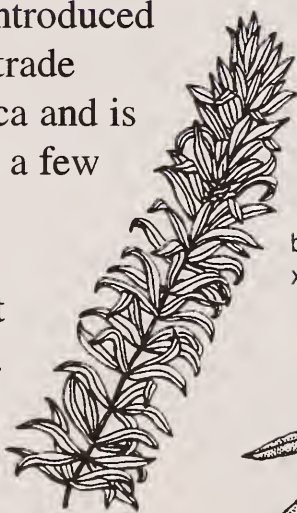


# SOUTH AMERICAN WATERWEED

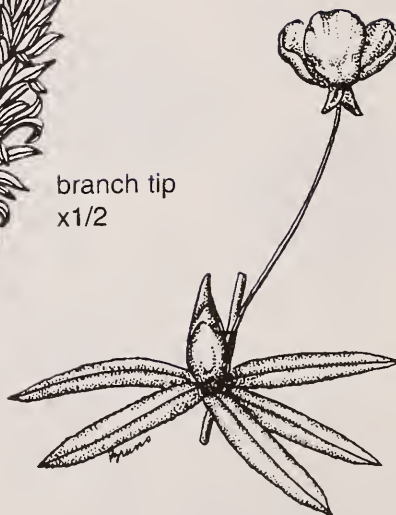
## *Egeria densa*



This species was introduced into the aquarium trade from South America and is now naturalized in a few areas of eastern Massachusetts. It appears as a robust *Elodea canadensis*. The leaves are whorled and the margins appear smooth to the unaided eye. The flowers are approximately 1 inch across as compared to the much smaller *Elodea*.



branch tip  
x1/2



plant with staminate  
flower x1



leaf x1

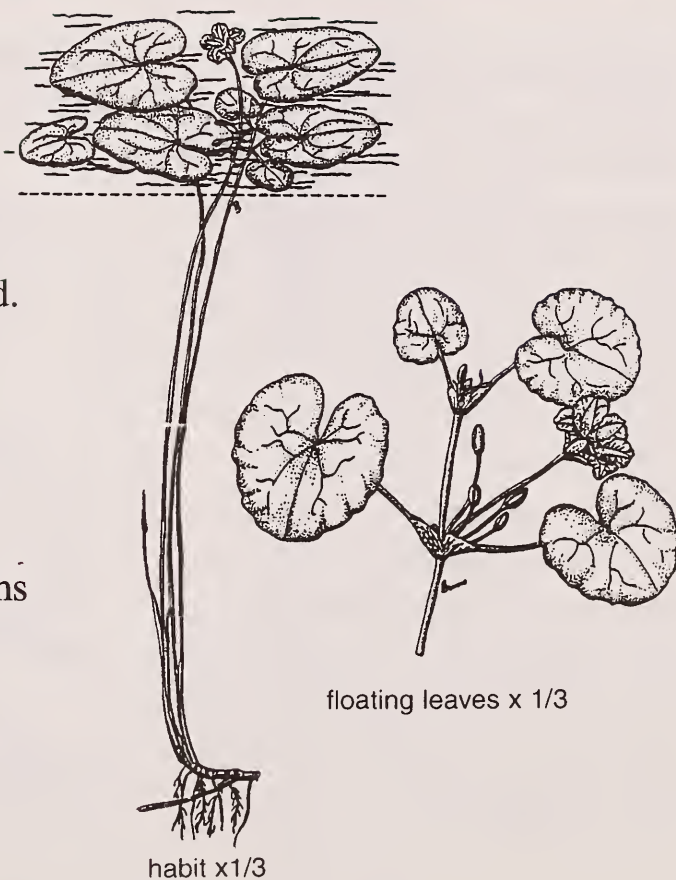


# YELLOW FLOATING HEART

*Nymphoides peltata*



This extremely hardy Eurasian species spreads rapidly from seed. The leaves appear similar to small waterlily leaves, but the yellow flowers are more showy than the native yellow waterlilies. The long stems can impede swimming and boating.

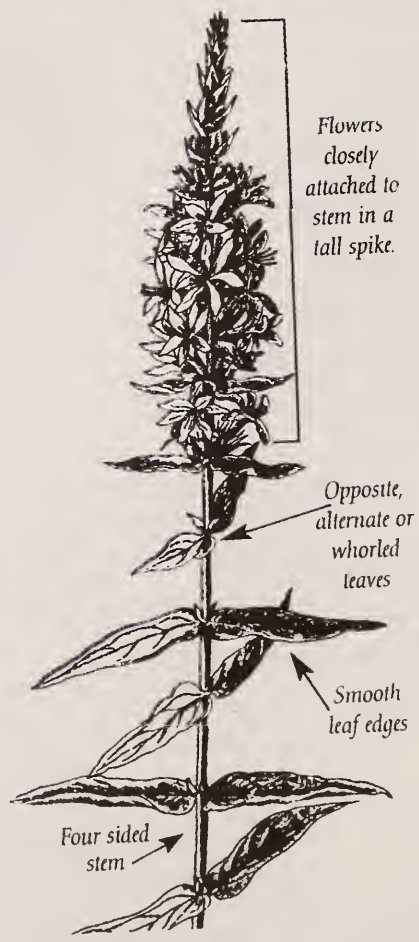


# PURPLE LOOSESTRIFE

*Lythrum salicaria*



Purple Loosestrife is an invasive non-native plant from Europe and Asia that was introduced almost 200 years ago. When purple loosestrife is introduced into wetlands, it out competes native plants such as cattails, sedges, bulrush and ferns. As these wetlands become infested with purple loosestrife, desirable food and nesting sites for wildlife are lost, there are fewer stopover sites for migrating birds, and key habitat is lost for other wet-land organisms.



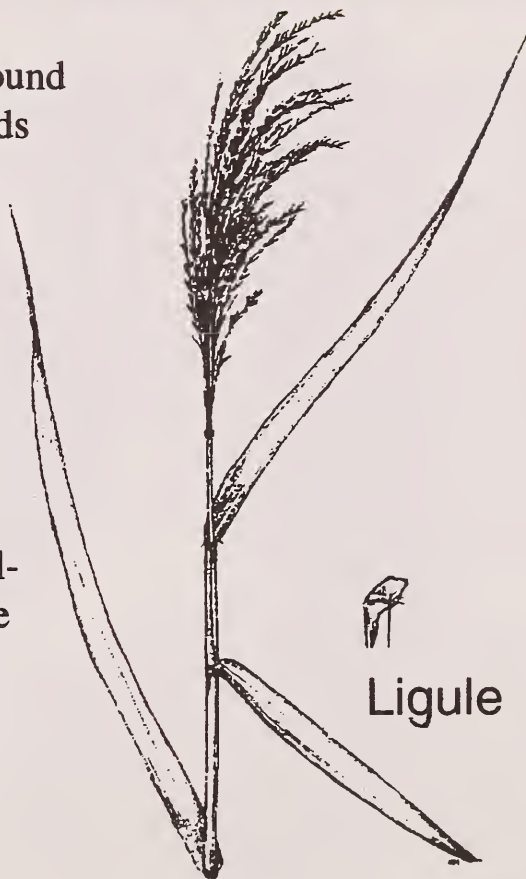


# COMMON REED

*Phragmites australis*



The Common Reed is often found along roadsides and in wetlands areas. The reed is able to grow in freshwater, brackish water and saline marshes. It grows in large dense stands that can reach 15 or more feet high. This reed out-competes native wetland species in the competition for resources, creating a mono culture. Stands of *Phragmites* are poor habitat for most wetland animals.

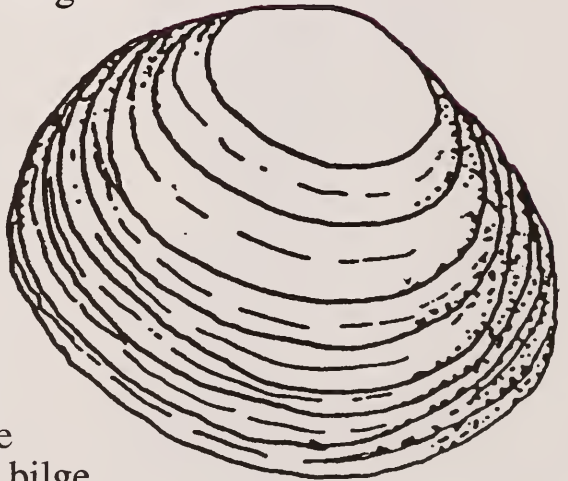


# ASIAN CLAM

## *Corbicula*



This clam is usually less than 0.5cm wide and is a dark beige to brown color. The major impact of the clam in freshwater systems is befouling of equipment. Power plants, boat motors, water intake pipes, etc. are all places the Asian Clam prefers to settle. Eventually they will cut off the flow of water through that structure. The clam can also out-compete native bivalves for resources.



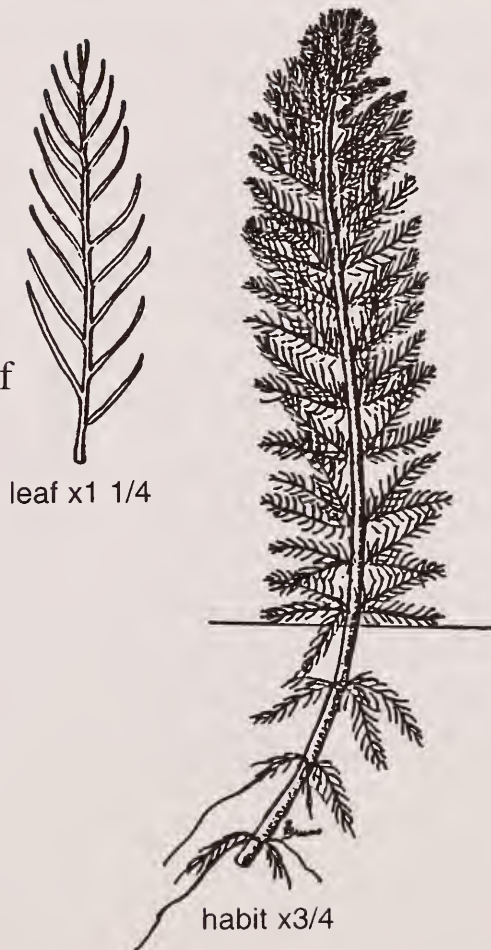
Juvenile forms of the clam are microscopic and can travel in bilge water, bait buckets or on boat trailers. Care should be taken to remove and RINSE all equipment when leaving a water body and before entering another.



**PARROT-FEATHER**  
*Myriophyllum aquaticum*

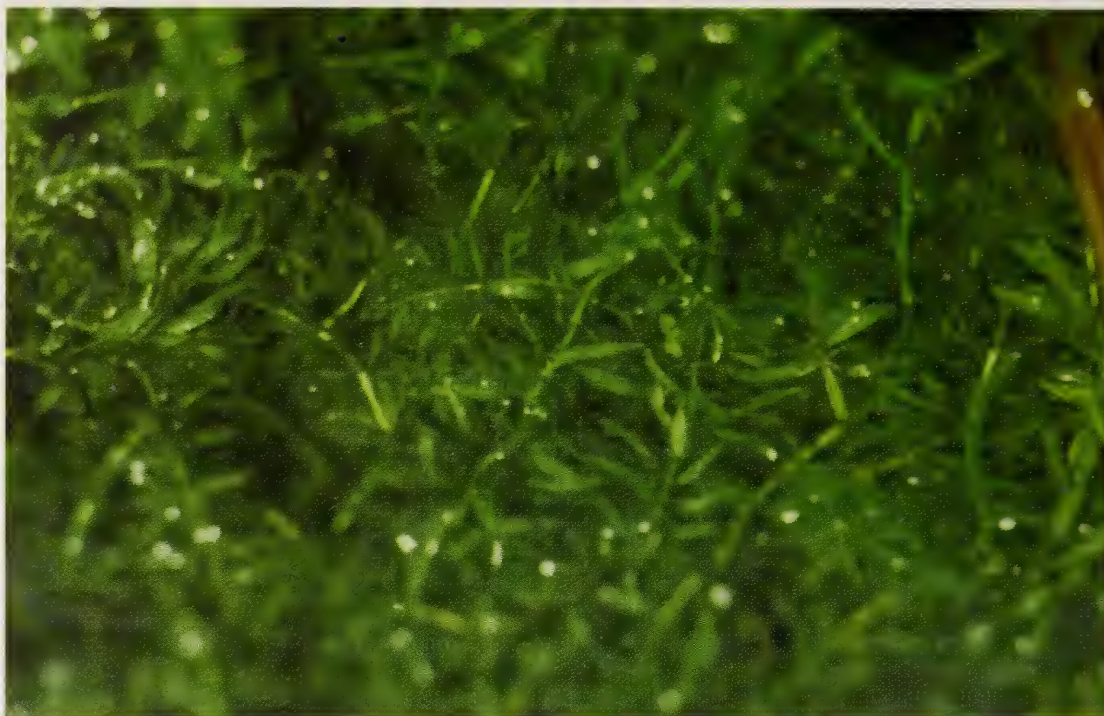


This South American species is established on Long Island, New York. Parrot-feather is common in the aquarium and water-garden trade, and can tolerate the harsh conditions of New England winters. It is separated from all the other watermilfoils by the presence of conspicuous emergent feathery leaves.



# HYDRILLA

## *Hydrilla verticillata*



Hydrilla has the potential to become a serious problem in Massachusetts. A population has recently been verified in southern Connecticut. This species is often confused with the native Elodea. Elodea leaves have very fine teeth that are not easily seen with the unaided eye and the leaves are in whorls of 3 as compared to 4-6 on Hydrilla. If found please report it to one of the agencies listed on the inside cover of this booklet.





# ZEBRA MUSSEL

*Dreissena polymorpha*



Zebra mussels get their name from the "zebra-like" stripes that are found on their shells. Usually less than 5cm long, zebra mussels can proliferate at an alarming rate. They will clog water intake pipes for factories, water treatment plants, boat intakes, nuclear facilities, etc. They can grow to densities of around 500,000 per m<sup>2</sup> + and reduce flows through pipes. Zebra mussels out compete other bivalves for food, space and other resources. Dead mussel shells are very sharp and can create a swimming hazard. The weight from large numbers of mussels has been known to sink channel markers. Young zebra mussels (veligers) are microscopic and can easily be transported. These young have been found in or on boat hulls, bait buckets, boat motors, boat trailers, and fishing tackle. Great care should be taken when leaving a lake known to be infested with zebra mussels. Wash all equipment that may have come in contact with the water.



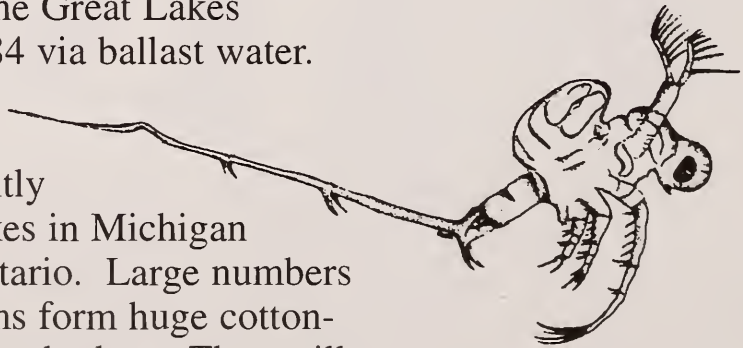
# SPINY WATERFLEA

*Bythotrephes cederstroemi*



The spiny water flea, a small planktivorous crustacean, averages about 0.25 to 0.50 cm in length, of which 70 percent is a long, sharp, barbed tail spine. Native to parts of Eurasia, it was first introduced into the Great Lakes ecosystem in 1984 via ballast water.

It has spread to all of the Great Lakes and currently infects inland lakes in Michigan and Southern Ontario. Large numbers of these organisms form huge cotton-like mats in a waterbody. They will foul fishing gear, boat motors, and can impede swimming. The spiny waterflea can also dramatically alter the food webs. It will out-compete small fish for food. It has few predators due to its sharp spines.

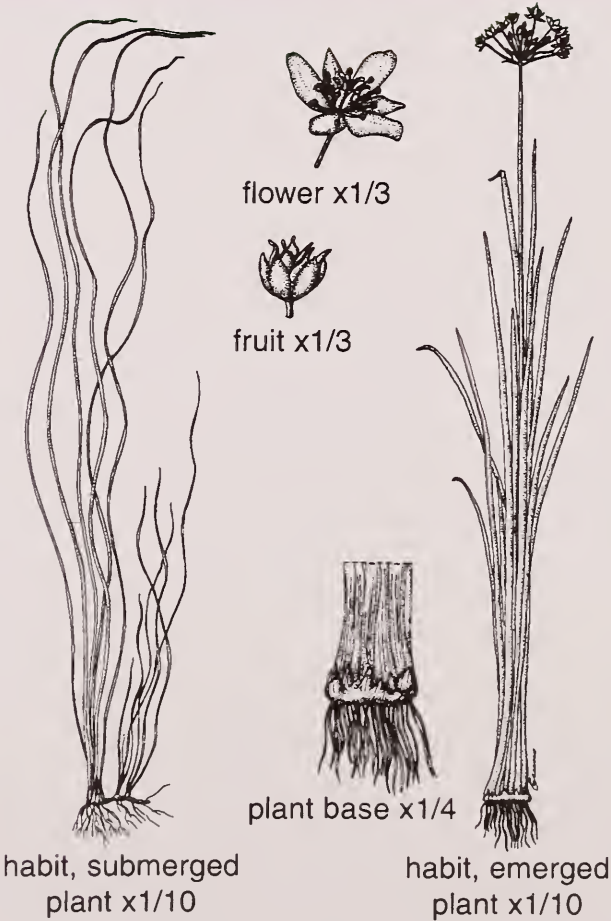




**FLOWERING RUSH**  
*Butomus umbellatus*

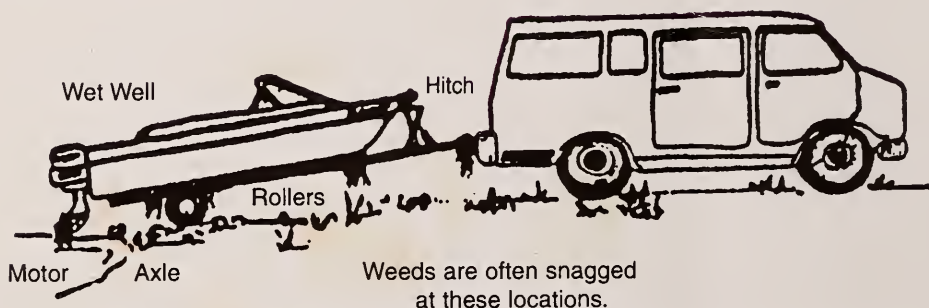


This plant is well established in the Lake Champlain drainage and along the Connecticut River in Connecticut. In the water, it appears much like the native water-celery, but the leaves arise from a fleshy rhizome. The emergent form is much more common and produces showy large pink inflorescences.



# STOP

## The Spread of Nuisance Fresh Water Organisms



### Clean All Organisms off Boats, Anchors, Motors and Trailers **BEFORE LEAVING AN ACCESS AREA**

Illustrations & excerpts are from the Aquatic Vascular Plants of New England series with the exception of those noted below:

Crow, G.E. & C.B. Hellquist. 1982, 1983. Aquatic vascular plants of New England. New Hampshire Agr. Exp. Stat. Bulls. 520, 524, Durham, N.H.

Crow, G.E. & C.B. Hellquist. 2000. Aquatic and wetland plants of northeastern North America. Univ. Wisconsin Press, Madison. (*Myriophyllum aquaticum*, *Nymphoides peltata*).

Godfrey, R.K. & J. W. Wooten. 1959. Aquatic and wetland plants of southeastern United States: Monocotyledons. U. Georgia Press, Athens. 712 pp. (*Hydrilla*).

Hellquist, C.B. & G.E. Crow. 1981, 1983, 1984. Aquatic vascular plants of New England. New Hampshire Agr. Exp. Stat. Bulls. 515, 518, 527. Durham, N.H.

Reed, C. 1970. Selected weeds of the United States. Agr. Handb. No. 366. Agr. Res. Serv., U.S. Dept. of Agr. (*Najas guadalupensis*, *Potamogeton crispus*).

Catling, P.M. & Porebski, Z.S. 1995. The spread and current distribution of European Frogbit, *Hydrocharis morsus-ranae* L., in North America. The Canadian Field - Naturalist 109(2):236-241.

Jane Swift, Governor • Bob Durand, Secretary, EOEA  
Peter C. Webber, Commissioner, DEM